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Dear Sir:

An increase in the U. S. Atomic Energy Commission's fiscal 1953 budget to a final figure of $2,898,800,000.00 was agreed upon by the Senate in Washington last week. Previously (this LETTER, 7/1/52) the House had reduced the more than $3 billion requested, to $1,450,000,000.00 and attached a rider that the USAEC could not use any of the money to start any installations for which it did not have the full amount of the funds on hand. The new figure, set by the Senate, will permit a start on all proposed construction, according to Gordon Dean, chairman, USAEC.

A nuclear reactor costing some $50,000 is to be built on the Salt Lake City campus of the University of Utah, according to Utah president A. Ray Olpin. The reactor will serve primarily as a research tool for scientific investigation and instruction. Lyle B. Borst, who was closely connected with reactor development at Brookhaven National Laboratory, from 1946 to 1951, will have the final say on the Utah reactor, which he plans will have fully half the flux of the $25 million Brookhaven reactor. Somewhat similar to the "water boiler" type of reactor at Los Alamos, the Utah job will be a definite effort to build the cheapest reactor possible with present day technological skills. University officials hope that the reactor can be operated and maintained by a faculty-student staff for about $10,000 a year. Cost of the Uranium-235 for the reactor will be $100,000 to $500,000, with a loss of 1% every 2 or 3 years. The $50,000 reactor construction cost will come from a $200,000 research grant by Kennecott Copper Co.

Military planners have now been criticized by the Joint Congressional Committee on Atomic Energy for failure to press for discovery and production of uranium minerals. In a report to Congress, the Joint Committee made these assertions: (1) Military leaders are not devoting a large enough share of defense funds to production of atomic raw materials, especially low-grade domestic ores. (2) Foreign sources of uranium supplies, which now furnish the bulk of the U.S.'s uranium supplies, may be cut off in the future. (3) A more vigorous research program is still much needed to seek out all opportunities for obtaining uranium where it appears in diffuse amounts. (4) The largest known U. S. source for uranium is the Colorado Plateau, a stretch of rugged and rocky western land along the Colorado river which needs prospecting and development. The Committee's main concern is, of course, with atomic bomb production. In this connection it stated that "a very substantial revision in both uranium and thorium procurement goals would promote the common defense and security".

The Oak Ridge Institute of Nuclear Studies, non-profit educational corporation which is composed of 30 member universities in the South and Southwest, will continue to operate certain programs for the USAEC at Oak Ridge for another 5 years, under the terms of a new contract recently awarded ORINS. Founded October 15, 1946, ORINS utilizes some of the unique atomic energy facilities at Oak Ridge to carry out research and training in the nuclear sciences. Specialized programs carried on by ORINS include a series of courses in the safe and efficient handling of radioactive isotopes, and a long-range research program on the treatment of malignant diseases.

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BUSINESS BRIEFS...in the nuclear energy field...

ELECTRICAL ENERGY FROM NUCLEAR POWER:- Predictions that nuclear energy will be used to generate electricity within the next ten years highlighted the three-day institute on the industrial and legal problems of nuclear energy held at the University of Michigan, Ann Arbor, June 26-28, under the sponsorship of the University's Law School with the co-operation of the Michigan Memorial-Phoenix Project, a University project dedicated to the peaceful uses of nuclear energy. There were three separate predictions regarding use of nuclear power made during the institute. Edward J. Putzell, Jr., secretary, Monsanto Chemical Co., St. Louis, said production of electric power from nuclear reactors is not far off, although it is "perhaps four or five years away, measured in terms of full-scale producing units". He reported that Monsanto and Union Electric Co., of Missouri, have recommended design and construction of a pilot plant to the USAEC. This plant, as recommended, would be dual purpose, since it would produce heat for use as power and at the same time provide the vitally needed plutonium. Approximately 200 business executives and lawyers heard J. Lorne Gray, general manager, Atomic Energy of Canada, Ltd., the government-owned Canadian nuclear project, report that Canada has set a "target date" of ten years for the use of nuclear energy to produce electricity to be fed to one of Canada's electric grids. He said an experimental power producing reactor "should be developed within the next four or five years". The third prediction came from Rep. Henry Jackson, Washington, a member of the House-Senate Joint Atomic Energy Committee. He said an electric power-producing nuclear reactor, capable of supplying all the electricity needed for a city of 100,000, can be in operation by the end of 1954, if the decision is made now.

The institue also heard Walker L. Cisler, president, Detroit Edison Co., express the belief that the use of nuclear power would not produce any distinctive impact on the economy of the electric power industry. Only about 17% of the investment in equipment would be affected by nuclear conversion, he pointed out, and a large part of the operating expense would continue according to present day practice. Lawrence R. Hafstad, director, Division of Reactor Development, USAEC, pointed out that if the military products of nuclear fission are priced high, it might justify the economic use of nuclear power. He emphasized that there was a good field already in the propulsion of some types of naval craft where costs of power for a high-speed submarine can run as high as $1.50 a kilowatt hour, in contrast to the cost of two cents a kilowatt hour on a capital ship, such as a cruiser or battleship.

Bennett Boskey, of the Washington, D.C., bar, and former USAEC general counsel, suggested that it is not too early to begin work on a legislative program to achieve some changes in the Atomic Energy Act. He said the discussions during the institute indicated a need for more flexibility in the field of personnel security and that Sections 4 and 7 of the Act should be amended to prevent any delay in moving ahead in the field of dual reactors. He observed that there appears to be reasonable doubt that these sections of the Act would permit outright ownership of nuclear energy facilities by private concerns.

NUCLEAR INSTRUMENT FIRM EXPANDS:-Beckman Instruments, Inc., pioneer Pasadena, Calif., manufacturer of instruments for nuclear measurements and other devices, has now acquired the business and certain assets of Berkeley Scientific Corp., Richmond, Calif., which now becomes a division of Beckman. (In March of this year Beckman obtained some $866,250 as proceeds from the public sale of 75,000 shares of its stock. A "substantial portion" of this amount was used by Beckman to acquire Berkeley.)

VOLUME INCREASE REGISTERED:- L. W. Cronkhite, president, Atomic Instrument Co., Cambridge, Mass., has recently stated that the volume of his firm's business for the first five months of 1952 is 200% greater than in the corresponding period of 1951; this is in Atomic's regular nuclear research instruments alone.

LOAN MADE TO PROCESS URANIUM:-The United States Export-Import Bank last week lent $19,600,000 to the Electricity Supply Commission of South Africa for expansion of steam electric power facilities. The additional electrical energy is for the requirements of the plants separating uranium from the tailings of the gold mines. The loan is for 18½ years at 4% interest; it is the second such loan made for this purpose--the first was for $35,000,000.

RAW MATERIALS...radioactive minerals for nuclear work...

CANADA-Eldorado Mining & Refining, Ltd., the Canadian Government-owned uranium producer, which now has an extensive new uranium development program underway at Beaverlodge, near the north shore of Lake Athabaska, here in Canada, has set a production date of April 1st, 1953, for this new operation. Milling will be at an initial rate of 500 tons per day, but crushing and mining plants are being installed to handle an eventual capacity of 2,000 tons daily. (Canada, which dropped from second to third place in world uranium output, is expected to regain second postion when Beaverlodge comes into production. Undisputed first place is held by mines of the Belgian Congo operated by the Union Miniere du Haut-Katanga, with the United States now in second position.) Close to $9½ million is to be spent on Beaverlodge, from Jan. 1st, 1952--April 1st, 1953. Other activities of Eldorado (as its 1951 annual report, recently issued, now shows) included activities of its radium filling laboratories. These laboratories shipped in 1951 a total of 1,878 units, a substantial increase over 1950. Gross revenues from the sale and rental of radium, radioisotopes, and miscellaneous equipment amounted to $517,250, an increase of 20% over 1950. The trend toward more commercial and industrial sales, as opposed to revenues from governmental agencies, continued, the report stated. Among Eldorado's experimental work which can be disclosed was a new uranium refining process. Early this year it "became possible to undertake an appraisal of the new process based, in the main, on the results of the company's pilot plant operations". Process engineering is now underway. Of unusual interest is the agreement which Eldorado entered into with Radiore Uranium Mines, Ltd., whereby Eldorado obtained the right to carry on exploration, mining, and development on the 24 claims held by Radiore and which are contiguous to the Eldorado holdings. This was the first such arrangement made by Eldorado with a private concern, and involved a favorable financial arrangement for Radiore.

AFRICA-Large deposits of uranium have been recently identified in Kano Province, Nigaria, by geologists of the Geological Survey (of Great Britain). According to a joint report of the D. S.I.R. and the G.S.("The Albite-Riebeckite-Granites of Nigeria, "H.M. Stationery Office, London, 3s. 6d.) the main difficulty with the Nigerian deposits would appear to be extraction of the uranium metal itself from the mineral carrying it, and of the mineral, pyrochlore, from the granite rocks in which it is found. The report suggests that the deposit contains several million tons of granite, containing about 120 grams of uranium and 2,600 grams of niobium oxide a ton. Experiments are now in progress at the Atomic Energy Research Establishment (Harwell, England), to find a means of extracting the two metals; the results will determine whether the ore will ever be of economic value.

MADAGASCAR-The setting up of a works near Antsirabe for the concentration of uranium minerals discovered in 1951 is being considered. The region also contains deposits of beryllium minerals, and the French Atomic Energy Commission is considering their development.

GERMANY - Goverhment sources in Bonn, Germany, revealed recently that sufficient amounts of uranium minerals had been discovered in the mountains of the Black Forest to meet West Germany's requirements for nuclear research. (Small scale nuclear research for scientific and medical purposes has been permitted in Germany.)

BRAZIL- Admiral Alvero Alberto, head of the Brazilian National Council of research, recently declared that the Council plans very shortly to utilize the uranium deposits in the State of Minas Geraes. Reportedly, three concentrations of particularly rich deposits of uranium have been located there.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Miscellaneous Physical and Chemical Techniques of the Los Alamos Project. A. C. Graves and D.K. Froman, editors. One of the National Nuclear Energy Series, Manhattan Project technical section. 336 pages.--McGraw-Hill Book Co., New York 36, N.Y. ($4.00)

Harwell. The first official account of British atomic energy research since 1945. The research side of nuclear energy in Britain; no discussion of the plutonium production piles at Risley, the chemical separation plant at Sellafield, etc. 128 pages.--H.M. Stationery Office, London, Eng.(6s.)

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS: Scintillation detection units, designed and engineered specifically for medical use, and known as "Scanographs". These instruments were developed to meet the requirements of medical, clinical, and research programs, and provide all the basic equipment in one instrument for a diagnostic isotope service, the maker states. After one year of thorough testing in numerous hospitals (according to the maker) the "Scanographs" have "proven to be the ultimate in sensitivity and versatility" for practically all isotope applications, i.e., thyroid uptake measurements, brain tumor localizations, blood volume studies, etc. The Model C-2000 "Scanograph" is comprised of the following: gamma scintillation counter-balanced arm which supports the counter (with or without a lead collimating cap) and allows accurate and reproducible placement of the counter; and a scintillation scaler incorporating the three essential features needed for quantitative scintillation counting, namely, a linear amplifier, pulse height discriminator, and a well regulated high voltage power supply. All of these essential parts are compactly mounted in a portable cart which allows easy transport of the complete unit anywhere in the hospital or clinic.--Nuclear Research and Development, Inc., 1094 Sutter Ave., St. Louis 5, Mo.

New Betta-Gamma probe, for use with the firm's "Samson" Alpha survey meter. This new probe, the "Raychronix" Model D-5A, contains a freon-filled ionization chamber, and an electrometer preamplifier. A rotating 1000 mg/sq.cm. stainless steel shield provides for beta discrimination. The probe extends the original "Samson" ranges of 0-500, 2500, 12500 alpha cpm, to 0-0.25, 1.25, 6.25, 25, 125, and 625 mr/hr.--Radioactive Products, Inc., Detroit 26, Mich.

CATALOGUE NOTES: Nuclear Instrument and Chemical Corp., Chicago 10, Ill., has now issued a new condensed catalogue listing that firm's latest instruments and radiochemicals for radioisotope applications in the medical, educational, industrial, and research fields. Among the new products listed in the condensed catalogue are the "Cloudmaster", a low-cost diffusion cloud chamber which allows radioisotope disintegration to be seen; the "Isotron", a new instrument for the clinical measurement of I-131 in brain tumor studies; the "Hand & Foot" counter, a completely automatic monitor for detecting and indicating the degree of contamination on the hands and shoe soles of radiolaboratory personnel; and the latest list and prices of Nuclear's carbon-14 radiolabeled chemical compounds.

A pamphlet describing the operation of an inexpensive weekly film badge service for the measurement of personnel exposure to radiation from radioactivity, x-rays, or radium has been issued by Tracerlab, Inc., Boston 10, Mass. The booklet should be of interest to safety directors of foundries and metal working plants where radiography is carried out, as well as to all radiologists, roentgenologists, radiochemists, and hospital administrators, who are concerned either with guarding themselves or others against the harmful physical effects of radiation dosages. In addition to providing complete details about the weekly service, a film badge Survey Packet is described. The Packet consists of a number of film badges that can be worn at various body locations to determine radiation by specific body areas. With the information obtained, suitble protective garments can be obtained.

INDUSTRIAL NOTES: The problems of packaging radioactive isotopes will be featured at the 14th annual forum of the Packaging Institute, Oct. 20-22, New York City, according to the program committee chairman, R. Chester Reed, of the Texas Co. The theme of the forum is "Packaging in the Advancing Atomic Age"; ten semiars on packaging problems will be held during the 3-day meeting.

A control system utilizing strontium-90 beta gages has been installed at the Gates Rubber Co., Denver, that tire and belt manufacturer reports. The gages detect variations in the weight of the rubber coating given the cord and fabric before these variations have a chance to affect the quality of the product. The amount of rubber coating applied to each square yard of fabric can be measured within 0.01 pound, the firm states.

ATOMIC PATENT DIGEST...latest U. S. grants & applications...

Radiation measuring instrument. In part, an electronic circuit comprising means for automatically space charge limiting a multielement tube to prevent destabilization and damage to the cathode during its warm-up period, consisting of a predetermined negative grid bias potential supply, with associated circuit. U. S. Pat. No. 2,601,585 issued June 24, 1952; assigned to United States of America (USAEC).

Pocket ionization chamber. Comprising, in part, the combination of a tubular hermetically sealed electrically insulating casing, a tubular outer conducting electrode located within and co-axial with this casing, a cylindrical contact element mounted on and coaxial with the exterior surface of the casing, a rod-like inner conducting electrode within and axial of this casing, and a gaseous ionizing medium within this casing. U. S. Pat. No. 2,601,637 issued June 24, 1952; assigned to United States of America (USAEC).

Method of concentrating isotopic carbon. In part, the process of enriching carbon dioxide with respect to the heavy isotopes of carbon contained therein. Comprises contacting the said carbon dioxide while present to the extent of 0.5 to 10 volume percent in admixture with an inert gas with chlorophyllic plant life in a closed system. U. S. Pat. No. 2,602,047 issued July 1, 1952; assigned to United States of America (USAEC).

High speed bearing and turbine. A stator-rotor assembly for ultra high angular speeds of the rotor. The stator has an internal cylindrical surface with outwardly flaring end surfaces, while the rotor is slightly smaller in diameter than the stator cylinder and has short outwardly flaring end abutments. U. S. Pat. No. 2,602,652 issued July 8, 1952; assigned to United States of America (USAEC).

Process for the production of zirconium tetrafluoride. Comprises, in part, reacting a zirconium chloride with gaseous hydrogen fluoride at a temperature of about 50 deg. C. until at least 90% of the zirconium compound has been converted to zirconium tetrafluoride, and then reacting the product to completion with hydrogen fluoride at a temperature of about 300 deg. C. whereby a practically nonhydrolyzable zirconium tetrafluoride is produced. U. S. Pat. No. 2,602,725, issued July 8, 1952; assigned to United States of America (USAEC).

Method for sterilizing substances or materials such as food and drugs. In part, that method of irradiating materials, namely food and drugs, with high-energy electrons. The method consists in rapidly scanning the material with a high intensity electron beam so as to increase the instantaneous ionization density and thereby reduce adverse effects on the taste, color, nutritive value, potency, and other required properties of the material. U. S. Pat. No. 2,602,751 issued July 8, 1952; assigned to High Voltage Engineering Corp., Cambridge, Mass.

Nickel welding. In part, a process which comprises arc welding nickel and nickel-base alloys using a shield base mixture containing from 5-15% by volume of hydrogen and from 95-85% by volume of argon. U. S. Pat. No. 2,602,871 issued July 8, 1952; assigned to United States of America (USAEC).

Ion intensity control mechanism for mass spectrometers. Comprising, in part, a mass spectrometer having an ion source and collector, an inlet for feeding vapors to this source and means responsive to the flow of ion current to the collector of this spectrometer for regulating the vapor flow to the source. U. S. Pat. No. 2,602,898 issued July 8, 1952; assigned to United States of America (USAEC).

Radiation device and method of construction. A radiation measuring device comprising, in part, a pair of spaced wire-like electrodes, fluid retaining electrically conducting wall means defining a single gas enclosure, a gaseous ionizing medium disposed within said gas enclosure, and a pair of mutually confronting radiation permeable windows disposed between said electrodes, these windows forming a portion of the wall means, so that the radioactivity of an object may be measured by placing the object exterior to the gas enclosure and between the radiation permeable windows. U. S. Pat. No. 2,602,904 issued July 8, 1952; assigned to United States of America (USAEC).

Sincerely,

The Staff,
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